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MetroLink

Utilities and Infrastructure Amendments

Swords Pumping Station

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Contents

1. Introduction and Background

Chapter 22 of the EIAR (Infrastructure and Utilities) describes the need for a new wastewater pumping station at Swords (south-west of the Estuary roundabout) to support the reconfiguration of the existing wastewater collection system along the R132 roadway to facilitate the route of the MetroLink line.

The Construction Phase Chapter of the EIAR (Chapter 5) describes the construction methodology for the pumping station, however this did not take into account that mechanical excavation into the rock will be necessary to obtain the required depth for construction of the sump chamber. The mechanical excavation of rock at this location will require the use of a mini road header (a rock cutting machine). Noise and vibration from the construction of the pumping station has not been specifically assessed within the EIAR.

In addition, following submission of the MetroLink Railway Order (RO) application on 30th September 2022, the design of the drainage system serving the proposed pumping station has changed, subsequent to consultation with Uisce Éireann.

A Technical Note was issued on the pumping station design changes during the Oral Hearing, however the purpose of this report is to present an assessment of any environmental effects resulting from the Proposed Works using the methodology developed for addendums to the MetroLink EIAR.

This document includes:

- A technical description of the proposed amendment;
- Reference information considered in assessing the impact of the design change;
- A description of the construction works required for the proposed amendment;
- Details of the assessment methodology used;
- A review and assessment of potential environmental effects arising from this design change; and
- Conclusions of the review.

For the purposes of clarity, the design and works that are outlined within the RO will be referred to as “Proposed RO Works”.

At the time of writing the Technical Note, two route options for the pumping station emergency overflow were assessed. A preferred option has subsequently been agreed with Uisce Éireann and this routing is the only option assessed in this addendum report.

2. Reference Information

The information reviewed in the development of this addendum includes the following figures provided with the RO application that have been updated to reflect the design changes described in Section 3.

2.1 Figures

Drawing Number	Change	New revision no.
ML1-JAI-URD-ROUT_XX-DR-Y-01011	Location and routing of the pumping station emergency overflow. Routing of the discharge rising main from the pumping station. Removal of the attenuation storage tank in Balheary Park.	P07
ML1-JAI-URD-ROUT_XX-DR-Y-02011	Location and routing of the pumping station emergency overflow. Routing of the discharge rising main from the pumping station. Removal of the attenuation storage tank in Balheary Park.	P04

3. Technical Description of the Proposed Works

The drainage configuration associated with the Swords Pumping Station has changed as a result of ongoing consultation with Uisce Éireann. The original utilities drawing presented within the RO Utility Details Book 1 of 4 (Fingal County Council) shows a proposed emergency overflow to the Ward River from the pumping station. An alternative design solution has been developed that avoids discharge to the river and returns overflows to the Swords Wastewater Treatment Works (refer to drawing ML1-JAI-URD-ROUT_XX-DR-Y-01011, Balheary Demesne, Sheet 5 of 5).

The emergency overflow from the pumping station has been redesigned to connect into an existing 600mm diameter Uisce Éireann foul sewer that conveys the flow to the existing Swords Wastewater Treatment Works, providing an alternative route to the normal outfall from the pumping station. The emergency overflow pipe is also 600m diameter. The proposed route of the overflow pipe crosses the MetroLink alignment and the Estuary roundabout and joins the existing sewer at the junction with Estuary Road.

The proposed RO route for the 'normal' outfall from the pumping station (a discharge rising main) crossed the R125, traversed Balheary Park to an attenuation storage tank and then followed the R125 to discharge into the Swords Wastewater Treatment Works. Post RO submission, it was agreed with Uisce Éireann that the additional storage volume is not required. Thus, the attenuation storage tank shown on the drawing in Balheary Park is no longer required (refer to drawing ML1-JAI-URD-ROUT_XX-DR-Y-01011, Balheary Demesne, Sheet 5 of 5).

Under the revised proposal, the 'normal' route of the pumping station outfall crosses the MetroLink alignment through two rising mains (one for foul water and one for storm water). East of the alignment, both rising mains cross the Estuary roundabout and discharge into an existing Uisce Éireann sewer that conveys the flow to the wastewater treatment plant.

Both the revised normal discharge route and the emergency overflow routes from the pumping station to the wastewater treatment works are within the Project boundary indicated on the RO drawings. Both routes require sections of new pipework to be installed along the R132 and Lissenhall Road, out with the curtilage of the temporary land take area demarcated within the EIAR for the Seatown Satellite Construction Compound. The pipework is to be installed within the public highways.

The pumping station principally comprises a below ground sump chamber and an above ground control building. The dimensions of the sump chamber on the drawings submitted with the RO application are 20m in diameter and 20.4m in depth.

The Construction Phase Chapter of the EIAR (Chapter 5) describes the construction methodology for the pumping station, however this did not take into account that mechanical excavation into the rock will be necessary to obtain the required depth for construction of the sump chamber. The mechanical excavation of rock at this location will require the use of a mini road header (a rock cutting machine). Noise and vibration from the construction of the Swords Pumping Station had not been specifically assessed within the EIAR. This is being assessed in this addendum report.

4. Assessment Methodology

An analysis of the differences between the Proposed RO Works and the Proposed Works has been undertaken to determine the environmental effects of the proposed change and to identify whether there is potential for additional significant environmental effects over and above that identified in the MetroLink EIAR. This assessment consisted of a two stage process:

- **Stage 1 Assessment of Potential for Environmental Effects:** A review of the potential for additional environmental effects not previously considered by the MetroLink EIAR as a result of the Proposed Works.
- **Stage 2 Assessment of Significance of Environmental Effects:** A review of the potential environmental effects identified to determine significance of effects, the required mitigation measures and residual effects.

This environmental review has had regard to the following key issues:

- Potential for the generation of higher or lower emissions, material or waste not considered in the MetroLink EIAR, and
- Potential for impacts arising from the works at new locations with reference to sensitive receptors (over and above those assessed in the MetroLink EIAR).

5. Environmental Assessment

5.1 Introduction

This section summarises the environmental review, undertaken in accordance with the two stage methodology described in Section 4 to determine if there is potential for additional impacts on the receiving environment over and above those assessed in the MetroLink EIAR.

5.2 Stage 1 – Assessment of Potential for Environmental Effects

Table 5.2.1 summarises the results of the environmental assessment exercise undertaken, identifying the potential for additional environmental effects. The environmental assessment assesses the construction impacts that were not assessed in the EIAR associated with mechanical excavation into the rock and the changes to the pumping station drainage configuration described in Section 3.

Table 5.2.1: Environmental Review Summary

Environmental Effects	Potential for Additional Effects	Rationale
Traffic and Transport	No	A temporary road diversion will be required to enable the cut and cover section of the alignment at Seatown to be constructed and a traffic management plan will be implemented to allow traffic movements on the R132 Swords bypass and other feeder roads to continue. The proposed drainage installation works will be incorporated within the traffic management plan detailed in the EIAR.
Planning Policy	No	No change in any relevant Land Use Plan. No relevant changes in planning policy.
Human Health	Yes	Potential for human health effects in the event of exceedances of relevant criteria arising from other environmental assessments.
Population and Land Use	No	There is no potential for additional effects on Population and Land Use from the Proposed Works in this location.
Electromagnetic Compatibility and Stray Current	No	There is no potential for additional effects from the adjustment from the Proposed Works in this location.
Airborne Noise & Vibration	Yes	In the Railway Order, the construction methodology for the pumping station did not take into account that mechanical excavation into the rock will be necessary to obtain the required depth for construction of the sump. There is potential for airborne noise and vibration from the mechanical

Environmental Effects	Potential for Additional Effects	Rationale
		excavation of rock, secant piling and concreting which has not previously been assessed within the EIAR.
Groundborne Noise & Vibration	Yes	There is potential for groundborne noise and vibration from the mechanical excavation of rock which has not previously been assessed within the EIAR.
Biodiversity	No	There is no potential for additional biodiversity impacts associated with the Proposed Works.
Air Quality	Yes	The Proposed Works will result in the generation of dust during the construction phase, associated with excavation works and the movement of excavated spoil.
Climate	No	There is no potential for additional effects from the Proposed Works.
Hydrology	Yes	The emergency overflow from the pumping station has been redesigned to connect into an existing sewer that conveys the flow to the existing Swords Wastewater Treatment Plant. This avoids a discharge directly into the Ward River in the event of an emergency situation.
Hydrogeology	No	There is no potential for additional impacts on the natural groundwater regime.
Soils & Geology	No	There is no potential for additional effects from the Proposed Works.
Settlement	No	There is no potential for additional effects from the Proposed Works.
Land Take	No	There is no additional permanent land-take required. The temporary land-take required for installation of the new pipework is within public roadways.
Infrastructure & Utilities	Yes	Potential for addition impacts on utilities due to the change in the pumping station drainage arrangements.
Agronomy	No	This location is in an urban environment and the Proposed Works subject to this amendment are below ground.

Environmental Effects	Potential for Additional Effects	Rationale
Material and Waste Management	No	There is a reduction in the volume of excavated material generated due to the removal of the attenuation storage tank in Balheary Park from the design. This has a positive environmental benefit as reduces the quantity of material that requires management for recovery or disposal.
Archaeology and Cultural Heritage	No	No additional impacts on the archaeological or cultural heritage resources.
Architectural Heritage	No	There is no potential for additional effects from the Proposed Works.
Landscape & Visual	No	No impacts as the Proposed Works subject to this amendment are below ground.
Risk of Major Accidents and Disasters	No	There is no additional risk of major accidents and disasters due to the nature of the design changes.
Interactions	No	No additional interactions are predicted due to the nature of the design changes.
Cumulative Impacts	No	No additional cumulative impacts are predicted due to the nature of the design changes.

6. Stage 2 – Environmental Assessment

6.1 Airborne Noise & Vibration

Works required for the construction of the Swords Pumping Station are within the curtilage of the temporary land take area demarcated within the EIAR for the Seatown West Satellite Construction Compound, with the exception of the drainage installation works which extend beyond the compound. Construction noise calculations have not been undertaken specifically for construction of the pumping station within the EIAR. However, the EIAR has assessed works within the construction compound at Seatown West, together with the cut and cover works linear section at Seatown.

Construction of the pumping station is assessed in Section 6.1.1 and the drainage installation is assessed in Section 6.1.2.

6.1.1 Pumping Station Construction

Construction activities with the potential for airborne noise and vibration that have been assessed at Seatown West comprise site clearance and top ground level removal, installation of guide walls and piling mats, secant piling works, excavation, propping, concreting and close out works. Standard working hours at this location are from 07:00hrs to 19:00hrs on weekdays (excluding Bank and Public Holidays) and from 07:00hrs to 13:00hrs on Saturdays. For purpose of calculation, a 300m linear working area has been modelled which incorporates all work phases operating simultaneously within sequential work areas. All activities are modelled at ground level, representing a worst-case scenario.

For each modelled construction compound, a construction noise threshold (CNT) has been established for each modelled receiver location. The construction noise level at each receiver location has been compared against the CNT to determine the potential for significant impacts. The receiver locations modelled in this area are:

- Seatown West
- 77-78 Seatown Villas
- 79-84 Seatown Villas

Construction plant and equipment required for the pumping station construction has been reviewed and determined to be the same as that assessed for the cut and cover works along the R132 which runs adjacent to the compound, with the exception of the use of a mini road header for the excavation of rock.

The cut and cover works are in closer proximity to the receiving properties than the pumping station and therefore the cut and cover noise level predictions represent a worst-case scenario for those types of construction activities. The combined noise level arising from cut and cover activities and activities in the compound (assumed as general site work) resulted in a cumulative noise level at Seatown West properties and Seatown Villas being identified as having potential Significant to Very significant noise impact without mitigation. The modelled construction noise levels are detailed in Table 13.39 of the EIAR which is reproduced below.

Table 13.39 of the EIAR: Cut and Cover and Retained Cut Sections – Estuary to Seatown

Activity	Receptor		CNT		Predicted Significance of Impact		
	ID	Description	Weekday Day (07:00 - 19:00)	Saturday Morning (07:00 - 13:00)	CNL	Weekday Day (07:00 - 19:00)	Saturday Morning (07:00 - 13:00)
Cut and Cover/Retained Cut Construction – Linear sequential works and compounds	16	Seatown West	75	75	80 - 85	Significant to Very Significant	Significant to Very Significant
	18	77-78 Seatown Villas	75	75	80 - 85	Significant to Very Significant	Significant to Very Significant
	20 - 21	79 – 84 Seatown Villas	75	75	76 - 80	Moderate to Significant	Moderate to Significant
	24	26-28 Comyn Manor	75	75	80 - 85	Significant to Very Significant	Significant to Very Significant
	25	16 - 17 Comyn Manor	75	75	76 - 80	Moderate to Significant	Moderate to Significant
	32	2-3 Estuary Court	75	75	76 - 80	Moderate to Significant	Moderate to Significant
	33	1 Estuary Court	75	75	80 - 85	Significant to Very Significant	Significant to Very Significant
	34	10 Estuary Court	75	75	76 - 80	Moderate to Significant	Moderate to Significant
	44	Woodies	75	75	76 - 80	Moderate to Significant	Moderate to Significant

To control noise impacts, a 4m high hoarding is proposed within the EIAR, extending around the south western boundary of the Seatown compound and along the line of the cut and cover works to control noise arising from this compound and the cut and cover works at the closest properties. Screening is an effective method of reducing the noise level from construction work areas and can be used successfully in combination with the other at source noise control measures included in Section 13.6.1.2 of the EIAR. The proposed hoarding height is detailed in Chapter 13, Table 13.85 of the EIAR for this compound (reproduced below).

Table 13.85 of the EIAR: Construction Site Hoarding

Location	Site Boundary	Activity	Height
R132	Construction compound at Seatown	General Site Compound	4m

Table 13.86 of Chapter 13 of the EIAR identifies the properties at Seatown Villas immediately adjacent to the cut and cover works have the potential to trigger eligibility for Noise Insulation (NI) in line with the *Transport Infrastructure Ireland (TII) Airborne and Groundborne Noise Mitigation Policy* (Appendix A14.6). This document sets out the further mitigation measures and supports which will be available to those who meet the eligibility criteria. Given the similar distance from the works of Residential Properties at Seatown West (Receptor 16 of EIAR), these properties also are likely to trigger the eligibility for NI. This is identified in Item 120 of the Schedule of Errata Table.

The mini road header had not been considered as a noise generating activity at this location within the modelling undertaken for the EIAR. However, this will only be used at depth for breaking down rock and will be screened by the sides of the excavation and the extensive site hoarding to the Seatown compound. The bedrock is at a depth of approximately 7m below ground level in this location. There is potential for the mini road header to be in operation during the same time as the R132 cut and cover works. Whilst these activities may occur simultaneously, the cumulative noise level associated with both will be no higher than the range of noise levels assessed in the EIAR at the assessment locations. Noise mitigation for all noise sensitive locations adjacent to this area of works will be controlled through the various noise mitigation measures set out in the EIAR and outlined above.

A groundborne noise and vibration assessment for this activity is presented in Section 6.2 of this addendum report.

6.1.2 Drainage Installation

Utility works within the Seatown West compound are included in the discussion on construction noise levels for the pumping station in Section 6.1.1. Noise levels associated with construction activities for utility diversions and new installations outside of compound boundaries are assessed in the EIAR in Chapter 13, Section 13.5.2.6.7.

The utility diversion works assessed in the EIAR are considered typical of the works that will be required for the installation of new drainage pipework required for the pumping station. This will typically require excavation of a trench, loading of excavated material, trench support, pipe laying and bedding, backfilling and surface reinstatement.

Construction plant typically associated with the works include breakers, excavators, loaders, road pavers and rollers, which will operate as required depending on the specific activity taking place at any one time. Noise levels associated with these activities are set out in the EIAR in Chapter 13, Section 13.5.2.6.7. These are typically in the range of 64 to 82dB $L_{Aeq,T}$ at 10m, taking account of their typical 'on-time' in a working area. Allowing for a liner working area of 50m in length for any one utility diversion activity, a total noise level of 6 items of plant with an average noise level of 76dB L_{Aeq} each at 10m has been used for purpose of calculation to account for the mobile nature of plant and equipment in any working area.

Table 13.69 presented in Chapter 13 of the EAIR and replicated below outlines the calculated typical construction noise levels associated with utility works, at increasing distances from the works.

Thus, during the drainage installation works for the pumping station, the upper construction noise threshold value of 75dB L_{Aeq}, daytime, may be exceeded at distances of up to 30m from the works boundary in the absence of any noise mitigation. Several properties on The Crescent residential estate may be within 30m of the proposed drainage installation works and thus could experience a Moderate noise impact.

Noise mitigation will be required where drainage installation is scheduled within 30m of noise sensitive locations. Typical mitigation measures include:

- Localised screening of noisy plant items;
- For mobile plant items such as dump trucks, excavators and loaders - installation of an acoustic exhaust;
- For static plant such as compressors, generators and motors, units surrounded by acoustic lagging or enclosed within acoustic enclosures;
- For percussive tools such as pneumatic concrete breakers, fitting muffler or sound reducing equipment to the breaker 'tool' and ensuring any leaks in the air lines are sealed;
- Restricting significant noise generating activities to daytime hours where possible;
- Contractor to distribute information circulars informing people of the progress of works and any likely periods of significant noise; and
- Monitoring at representative noise sensitive locations.

Table 13.69 of the EIAR: Indicative Utility Diversion Construction Work Noise Calculations at Varying Distances

Average Plant Noise	Predicted CNL at Stated Distance from Edge of Works (dB LAeq,T)								
	10m	15m	20m	30m	50m	75m	100m	150m	250m
Average plant noise level at varying distances from source	84	81	78	74	70	66	64	60	56

Using appropriate mitigation measures the residual noise levels can be suitably reduced to below the construction noise threshold and thus the residual impact is Slight.

6.2 Groundborne Noise and Vibration

There is potential for groundborne noise and vibration arising from the mechanical excavation of rock and also from secant piling associated with the construction of the pumping station sump chamber. This was not assessed within the EIAR and thus has been assessed in this section of the addendum report.

The closest sensitive receptor to the excavation area for the Swords Pumping Station is approximately 40m to the south at Seatown Villas.

The method of mechanical excavation at this location will be by the use of a mini road header. The predictions of groundborne noise and vibration from these activities are presented in Table 6.2.

Table 6.2: Predictions of groundborne noise and vibration from construction of Swords Pumping Station

	Predicted level	Threshold level
Mechanical Excavation Groundborne Noise, L_{ASmax} dB	32	40
Mechanical Excavation Vibration, VDV $ms^{-1.75}$	0.012	0.8
VDV - Vibration Dose Value		

Groundborne noise during mechanical excavation is predicted to be below the threshold of 40 dB L_{ASmax} at the closest sensitive receptor, indicating no significant effect.

Vibration from mechanical excavation is predicted to be below the threshold of 0.8 $ms^{-1.75}$ at the closest sensitive receptor, indicating no significant effect.

As summarised in Section 14.4.1.1 of the EIAR, calculations of vibration from secant piling have been carried out for one of the closest buildings to this activity, namely Woodies Homeware, where the building is a distance of 2.7m from secant piling. As summarised in Section 14.4.1.1 of the EIAR the level of vibration from secant piling at Woodies Homeware is predicted to be approximately 1.2 mm/s, reducing by about half into the building. A vibration level of 0.6 mm/s entering the building would be equivalent to a Vibration Dose Value well below the threshold level for significant effects on “occupants of residential buildings” of 0.8$ms^{-1.75}$. The closest sensitive receptor to the secant piling for the pumping station is at a greater distance of at least 37m, and so vibration levels will be lower and below the threshold for adverse impact for human response.

An assessment of potential groundborne noise and vibration from the excavation of the pumping station indicates no significant impacts are predicted.

6.3 Air Quality

The Proposed Works will result in the generation of dust during the construction phase, associated with excavation works and the movement of excavated spoil. However, when the dust minimisation measures detailed in the mitigation section of Chapter 16 (and in further detail in the Dust Management Plan, Appendix 16.4) are implemented, fugitive emissions of dust are not predicted to be significant and pose no nuisance, human health or ecological risk to nearby receptors. The Proposed Works will not increase the magnitude of dust generation beyond that assessed in the EIAR for construction works in the Seatown area.

6.4 Infrastructure and Utilities

The changes to the proposed design of the pumping station comprise alternations to both the normal discharge route and the emergency overflow routes from the pumping station to the wastewater treatment works. The proposed design changes are described in detail in Section 3 of this document. The design changes have been agreed in consultation with Uisce Éireann and the associated environmental effects assessed within this addendum to the EIAR.

6.5 Hydrology

The emergency overflow from the pumping station has been redesigned to connect into an existing sewer that conveys the flow to the existing Swords Wastewater Treatment Plant. This has a positive environmental benefit as it avoids a discharge directly into the Ward River in the event of an emergency situation. The foul water will instead receive biological treatment at the Uisce Éireann wastewater treatment works prior to discharge under controlled conditions via the works permitted outfall to surface waters.

6.6 Human Health

On the basis that the Stage 2 assessment has concluded there are no significant noise, vibration or dust impacts resulting from the Proposed Works, there is no additional significant impacts on human health within this area.

7. Environmental Conclusions

The change in drainage arrangements associated with the Proposed Works has a positive environmental benefit as it avoids a discharge directly into the Ward River in the event of an emergency situation. Emergency overflows will receive treatment at the Swords Wastewater Treatment Works via an alternative route to the normal outfall from the pumping station.

Using appropriate mitigation measures, noise levels associated with the installation of new sections of drainage pipes along the R132 and Lissenhall Road can be suitably reduced to below the construction noise threshold resulting in no significant effects.

Dust that may be generated during the drainage pipework installation works can be adequately managed using the best practice mitigation measures set out in the Dust Management Plan (Appendix 16.4).

The assessment of potential airborne noise from the construction of the Swords Pumping Station indicates that levels would be below thresholds for the closest receptors, resulting in no significant effects. However, it is recognised that there are cumulative effects in this location with the properties at Seatown Villas and Seatown West (Receptor 16 of EIAR) likely triggering the eligibility for Noise Insulation (NI) in accordance with the TII *Airborne and Groundborne Noise Mitigation Policy*.

The assessment of potential groundborne noise and vibration from the excavation of the pumping station sump chamber indicates no significant impacts are predicted.